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A NEW APHID ON PENSTEMON IN THE SIERRA OF CALIFORNIA

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A single specimen of a beautiful little green aphid was first collected by the writer on a seed bearing shoot of the mountain pride, *Penstemon Newberryi* Gray, in the Echo Lake Region of the Sierra Nevada Mountains, California. Although I had assiduously collected aphids almost every summer in this area since 1924, I first encountered this aphid on our cabin site, Upper Echo Lake, 7500 ft. altitude, on August 11, 1938.

The following year on August 11, 1939, a very large series of apterous females and a single apterous male were taken at this same locality. Although a persistent and diligent search extending over a week was made, no alate individuals could be found. On August 10, 1946 I made extensive collections at Upper Echo Lake and secured good series of sexuparae and sexuales. They were feeding chiefly on the ripening seed stalks of mountain pride.

Aphis sierra Essig, new species

Color. All forms, excepting the males, are deep green, often of a bluish cast. In life the mature apterae have a dark spot on the median dorsum of the abdomen. This spot may be due to body contents since it disappears when the specimens are cleared. The drawings (Fig. 1) show the black markings of the various forms. When cleared the pigmentation shows up very distinctly.

Apterous viviparous female (sexupara). Very small, somewhat robust and almost triangular in shape. Smooth and with few hairs. A pair of lateral tubercles present on prothorax and on abdominal segments I and VII. Pale or bright green with conspicuous dark spot on the dorsum in life which does not appear in the cleared and mounted specimens. Antennae black excepting basal half of segment III. Cornicles and cauda black (the base of the latter clear). Legs pale, dusky and black as illustrated. Antennae scarcely more than half as long as the body; I, 0.02 mm.; II, 0.02 mm.; III, 0.23 mm.; IV, 0.15 mm.; V, 0.15 mm.; VI, 0.28 mm. (base 0.08; unguis 0.20 mm.); total 0.85 mm. Secondary sensoria absent. Rostrum

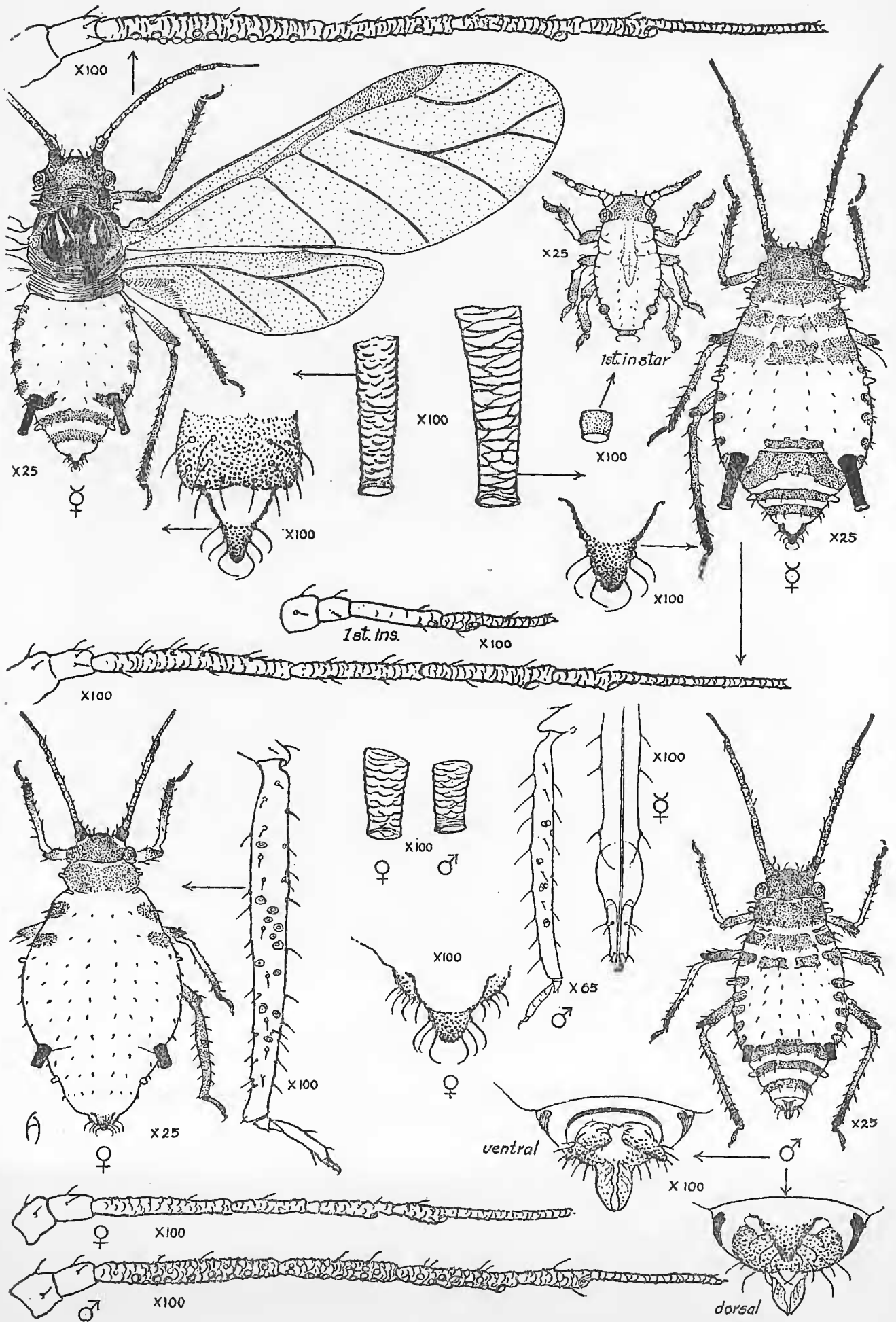
slender, extending to the base of the abdomen. Cornicles black; nearly cylindrical, wider at base and gradually narrowing apically; imbricated, with slight flange, length 0.23 mm. Cauda rough and scaly; triangular with wide clear base and bluntly rounded black apical half; with 3 pairs of fine recurved spines. Length of body 1.5 mm.; width 0.7 mm.

Alate viviparous female (sexupara). Mostly black with green and dusky abdomen. Rather slender, with few hairs which are short on the body and antennae and rather long on the legs. Antennae a little more than half the length of the body. Length of segments: I, 0.06 mm.; II, 0.06 mm.; III, 0.29 mm.; IV, 0.17 mm.; V, 0.17 mm.; VI, 0.30 mm. (base 0.08 mm.; unguis 0.22 mm.); total 1.05 mm. Secondary sensoria circular, arranged in an uneven row along the full length of segment III, varying from 11 to 18 in number; none to 2 (in a single case) on segments IV, V, and VI. Wing veins clearly defined; mediae of fore wings with second fork 0.4 the distance from margin of wing to the first fork; radial sector only slightly bent. Rostrum as in apterae. Cornicles black, cylindrical; heavily imbricated, 0.20 mm. long. Cauda triangular, rather sharply-pointed as indicated in accompanying drawing. Length of body, 1.5 mm.

Oviparous female (sexual). Apterous; slightly smaller than the apterous viviparous female and much paler in color and with only remnants of the dark dorsal markings. Antennae short; length of segments: I, 0.04 mm.; II, 0.05 mm.; III, 0.17 mm.; IV, 0.10 mm.; V, 0.12 mm.; VI, 0.22 mm (base 0.08 mm.; unguis 0.14 mm.); total 0.70 mm. Secondary sensoria absent. Rostrum extending beyond coxae of the hind legs. Hind tibiae slightly swollen and with sensoria distributed sparsely over the whole area excepting the basal and distal portions. Cornicles dusky, short, cylindrical, imbricated. Cauda dusky, much as in the apterous viviparous female. Length of body 1.24 mm.

Male (sexual). apterous, almost wholly black with dark green markings on thorax and abdomen; small, slender active. Antennae almost as long as the body. Length of segments: I, 0.04 mm.; II, 0.05 mm.; III, 0.22 mm.; IV, 0.15 mm.; V, 0.15 mm.; VI, 0.21 mm. (base 0.08 mm.; unguis 0.17 mm.); total 0.86 mm. Small circular secondary sensoria numerous and variable in numbers. They are distributed as follows: III, 11 to 25 (in one specimen 4-7); IV, 10-13 (in one specimen 20; in another 4); V, 6-12; VI, none. Rostrum extending well beyond the third coxae. On the hind tibiae of at least one individual, possibly an intermediate, were a number of single or paired sensoria-like organs similar to those found on certain oviparous females. (Fig. 1). Cornicles very short, about same

Fig. 1. *Aphis sierra* Essig, n. sp. Winged and apterous viviparous females, apterous oviparous female, apterous male, first instar young with important characters greatly enlarged. Drawings by Frieda Abernathy.



length as the cauda. Cauda broadly triangular. Claspers and penis as drawn.

Ova. Regularly oval. Mounted oviparous females appeared to contain one or possibly not more than two or three ova. These were being deposited on the plants in late August.

Aphis sierra differs from *Aphis pentstemonicola* Gillette and Palmer (1929a) in rarely having secondary sensoria on antennal segment IV, and without such sensoria on segment V of the alate viviparous female; with triangular rather than conical cauda; and with many more sensoria on the hind tibia of the oviparous females. It differs from *Aphis pentstemonis* Williams in having larger sensoria on III in the alates, shorter antennae with relatively shorter segments; and wider and shorter cauda with fewer hairs.

The specimens studied consist of a large series of individuals cleared in lactic acid-balsam-alcohol mixture and mounted in Euparal on 44 microscopic slides. These were mostly apterous viviparous females and 2 alates, and a goodly number of apterous oviparous females and apterous males. These have been variously designated as follows: *Holotype*—alate viviparous female—wings not quite perfect, UPPER ECHO LAKE, CALIFORNIA, August 10, 1946. *Morphotype*—apterous viviparous female, Upper Echo Lake, California, August 10, 1946. *Morphotype*—apterous oviparous female, Upper Echo Lake, California, August 10, 1946. *Andratype*—apterous male, Upper Echo Lake, California, August 10, 1946. *Paratypes*—all the remaining specimens of various kinds of all those studied. Collected at Upper Echo Lake, California, August 11, 1938, August 11, 1939, and August 10, 1946. All these specimens are in the author's collection. Paratypes are to be deposited in the California Academy of Sciences and the U. S. National Museum.

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